**SECTION 07210**

**FOAMED-IN-PLACE INSULATION**

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Foamed-in-place insulation in cavities of concrete masonry unit (CMU) walls.

### 1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
2. ASTM D2842 Standard Test Method for Water Absorption of Rigid Cellular Plastics.
3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
4. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
5. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.
6. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
7. ASTM E413 Standard Classification for Rating Sound Insulation.

### 1.3 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product Data: Submit manufacturer's product data and installation instructions, including the following:

1. Product description, insulation properties, preparation and storage requirements.
2. Requirements and procedures for site installation, including equipment and accessories.

C. Quality Assurance/Control Submittals: Submit the following:

1. **<u>Test Reports/Listing: Provide product test reports and product listing from an approved testing agency.</u>**
2. Certificates:

   a. Manufacturer's certification that product meets or exceeds specified requirements.
   b. Manufacturer's certification that applicator is trained in installation of product and is authorized by manufacturer to install product.

### 1.4 QUALITY ASSURANCE

A. Qualifications:

1. Applicator Qualifications: Utilize a qualified applicator with demonstrated experience in performing work comparable to the work of this section, and who is trained and authorized by the manufacturer to install the product.
**2. Product is to be listed by an approved testing agency.**

B. Certifications: Manufacturer certification that product complies with requirements of this section.

## 1.5 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Delivery: Deliver materials to applicator in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer. Product should be stored in paper sacks and protected from any water source until blending by installer.

D. Recycling:

1. Ship materials in containers that are readily recyclable.
2. Waste insulation materials must be biodegradable, suitable for public landfill disposal.

## 1.6 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Do not install foam insulation when product temperature is below 50 degrees F (10 degrees C).

# PART 2 - PRODUCTS

## 2.1 FOAMED-IN-PLACE BUILDING INSULATION

A. Manufacturer
1. PolyMaster, Inc.
2. Taylored Foam
3. Thermco

B. Proprietary Products/Systems. Foamed-in-place building insulation, including the following:

1. Foam Insulation:

a. Formulation: 3 part polymer foamed-in-place plastic insulation consisting of a proprietary dry powder resin, mixed by the applicator with a catalyst and foamed with compressed air.
b. Thermal Properties: K-value and R-value per inch thickness at 25 degrees F (-4 degrees C) (ASTM C518): K-value 0.216 Btu/($ft^2$ x h x deg F) (0.37 W/(m x K)). R-value 4.63 $ft^2$ x h x deg F/Btu (0.81 $m^2$ x K/W).

c. Thermal Properties: K-value and R-value per inch thickness at 75 degrees F (24 degrees C) (ASTM C518): K-value 0.244 Btu/($ft^2$ x h x deg F) (0.42 W/(m x K)). R-value 4.09 $ft^2$ x h x deg F/Btu (0.72 $m^2$ x K/W).
d. Water Vapor Transmission (ASTM E96): 4.655 grains/hr x $ft^2$.
e. Permeance (ASTM E96): 6.631 perms/inch (381 ng/(Pa x s x $m^2$)).
f. Average Permeability (ASTM E96): 15.749
g. Water Vapor Absorption (ASTM D2842): 10% by volume at 24 hours, at 25 degrees F (-4 degrees C), at 100% relative humidity.
h. Surface Burning Characteristics (ASTM E84): Flamespread 25, smoke developed 40, thickness 1" (25.4 mm).
i. Building Code Surface Burning Classification: Class I or Class A.
j. Shrinkage: 2% maximum.
k. Corrosivity: Noncorrosive.
l. Asbestos or Glass Fiber Content: None.
m. Off-Gassing or Odors: None.
n. Biodegradability: Biodegradable.

## 2.2 PRODUCT SUBSTITUTIONS

A. Substitutions: As outlined in the Gerneral Conditions of the Contract.

# PART 3 - EXECUTION

## 3.1 MANUFACTURER'S INSTRUCTIONS

A. Comply with the instructions and recommendations of the foamed-in-place building insulation manufacturer **and approved testing agency product listing.**

## 3.2 EXAMINATION

A. Site Verification of Conditions:

1. Ensure cores or spaces are free of mortar or other restrictions to the free flow of foam insulation.
2. Verify that all work within the wall voids is complete prior to installation.
3. Verify that masonry cells do not contain water.

## 3.3 PREPARATION

A. Allow masonry mortar to set prior to installing insulation.

B. Select most aesthetically pleasing locations for foam injection, including:

1. Locations to be concealed where possible:

a. Masonry joints.
b. Wythe side of walls.
c. Covered side of walls.

C. For pressure fill installation, drill fill holes into CMU cores.

1. Drill Hole Size: Minimum diameter 5/8" (15.9 mm), maximum diameter 2" (51 mm).

D. For 8" (203 mm) CMU, drill every other core. For 12" (305 mm) CMU, drill every core.

## 3.4 INSTALLATION

A. Install foam insulation in CMU cores using Pressure fill method to a uniform density. Completely fill all spaces, crevices and voids.

B. Fill and point drill holes in exposed or concealed masonry units with mortar after installation, shaping and texturing to match existing materials.

## 3.5 FIELD QUALITY CONTROL

A. Site Tests: Verify insulation density of each foam batch by random sampling of foam before installation.

1. Fill a 1 gal (3.8 L) nonsealing plastic bag with foam.
2. The bag weight shall be between 285 - 325 grams.

B. Inspection: Verify complete filling of voids by drilling or removing block face upon request.

1. Fill and point drill holes in masonry with mortar after inspection.

C. Correct any foam installation found not to be in compliance with manufacturer's requirements.

## 3.6 CLEANING

A. After foam insulation sets, remove excess insulation outside of cavity. Properly and legally dispose of waste with other construction waste material.

## 3.7 PROTECTION

A. Do not permit subsequent construction to damage or disturb installed foam insulation.

B. Do not paint masonry walls until at least 72 hours after installation of foam insulation.

END OF SECTION